

Module 03: The Automation Engine — Systemizing with VBA

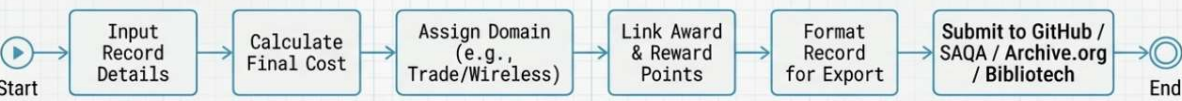
A purpose-built VBA engine automates record-keeping, standardizes data entry, and enforces logical workflows, ensuring the integrity and consistency of the Integrated Dossier.

The Core Data Structure

```
' Module: SpatialLegalCredentialDashboard
Type CredentialRecord
  DateStamp As Date           SalePrice As Currency   Award As String
  Institution As String       Amendment As Currency  LibraryUsageHours As Double
  Item As String              FinalCost As Currency  Notes As String
  SalePrice As Currency
End Type
```

This code is the engine that drives the system, transforming raw data into structured, auditable entries for submission to bodies like SAQA, ECSA, and international credentialing archives.

The Logic Flow (Logigramme)



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The Synthesis: An Audit-Grade, Credential-Linked Record Book

Credential-Linked Record Book – Tableaux Line Format (Snapshot)										
Date	Institution/Platform	Item/Module	Sale Price	Amendment	Final Cost	Award/Certificate	Library Usage	Notes/Integration Points		
2025-10-08	Sci-Bono Discovery Centre	Electrical Wiring Kit	R450	-R150	R300	Basic Electrical Safety	3h	SAQA/NQF Level 4, WA Code EA2		
2025-10-08	ECSA / Home Affairs	Engineer Registration	R1,500	-R500	R1,000	Registered Professional Engineer	4h	CCMA + Master Court archive		
2025-10-08	Schneider Electric	Smart Panel	R12,000	-R2,000	R10,000	Energy Mgmt Compliance	3h	GitLab + Azure DevOps billing portal		
2025-10-08	SASSETA / CCMA	Labour Law Training	R1,200	-R400	R800	Workplace Dispute Resolution	3h	MERSETA + Home Affairs compliance log		
2025-10-08	Atlantic Intl. University	MBM302 Master Thesis Review	\$450	-\$150	\$300	Master of Eng. Systems – Thesis Accepted	6h	IJETR3156 – Accepted, LMS + AIU Library		
2025-10-08	GitHub / Azure DevOps	CI/CD Pipeline Subscription	\$120	-\$60	\$60	Trailblazer Superbadge – Data Cloud	4h	GitLab audit log		

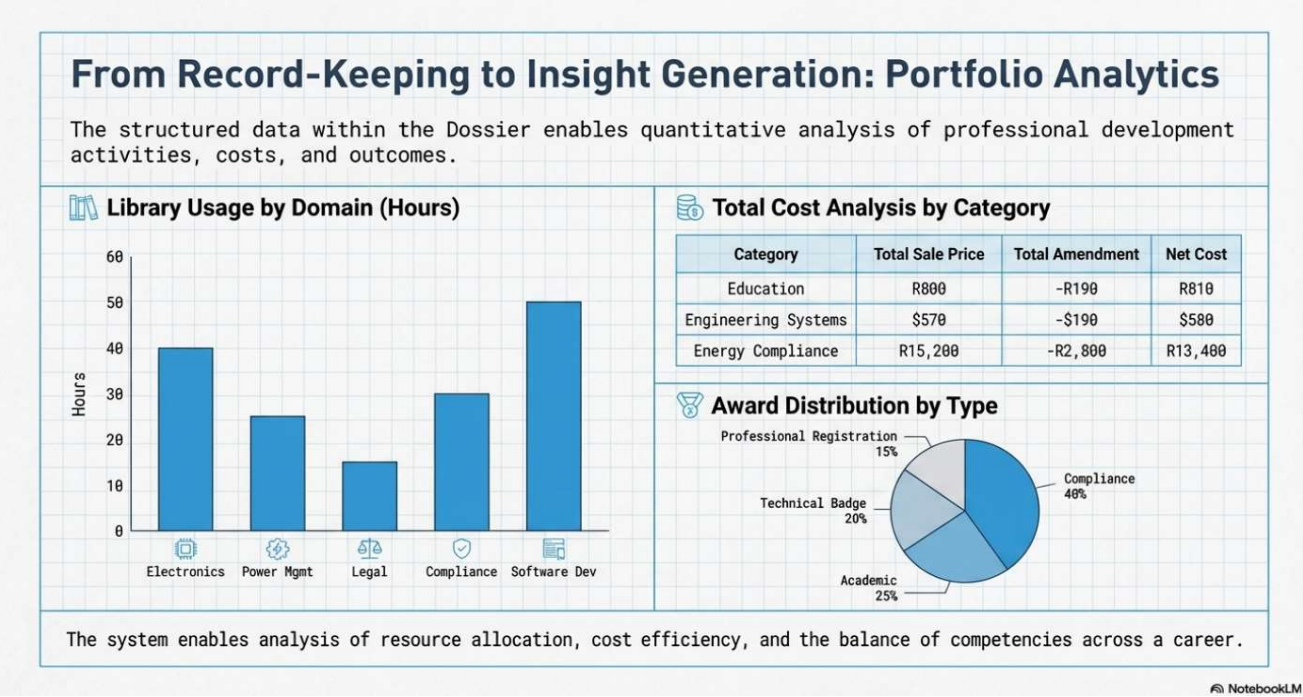
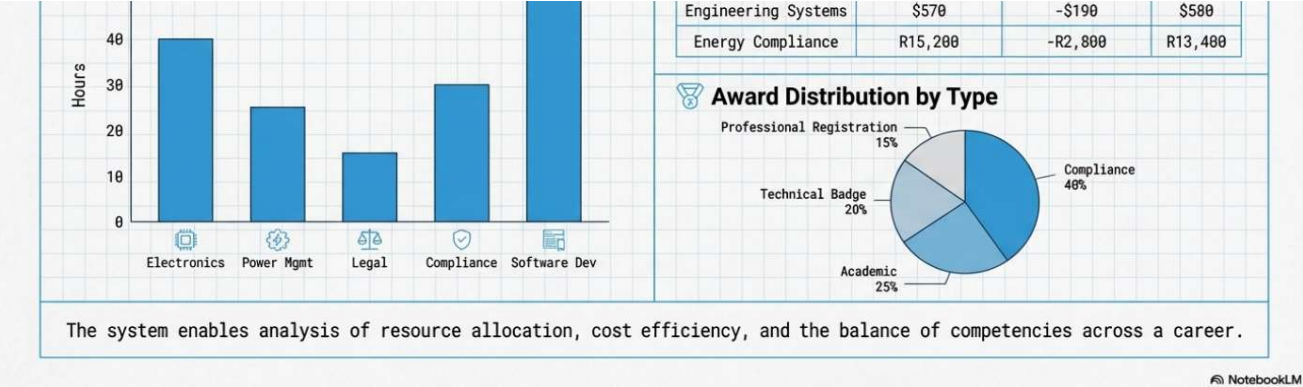
Each line represents a synthesized event, linking financial data, academic awards, and compliance metadata into a single, traceable record. This is the primary output of the Competency Engine.

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From Record-Keeping to Insight Generation: Portfolio Analytics

The structured data within the Dossier enables quantitative analysis of professional development activities, costs, and outcomes.

Library Usage by Domain (Hours)		Total Cost Analysis by Category			
60		Category	Total Sale Price	Total Amendment	Net Cost
		Education	R800	-R190	R810
50					



From Raw Data to Strategic Insight: Analyzing the Portfolio.

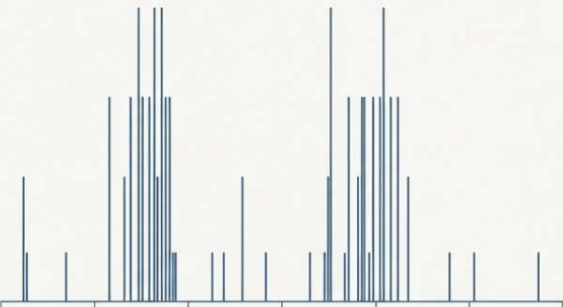
Total Cost Analysis by Category

Category	Total Sale Price	Total Amendment	Total Final Cost	Net Cost
Education	R800	-R190	R610	R810
Engineering Systems	\$570	-\$190	\$380	\$580
Energy Compliance	R15,200	-R2,800	R12,400	R13,400

Statistical Award Balance

Award Type	Count	% of Total	Avg Final Cost	Avg Library Usage
Electronics Fundamentals	1	10%	R360	3h
Energy Mgmt Compliance	1	10%	R10,000	3h
Registered Engineer	1	10%	R1,000	4h

Resource Utilization Profile



$$L(t) = \sum_{i=1}^N l_i \cdot \delta(t - t_i)$$
Modeling discrete library usage events over time.

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Outcome: An Audit-Grade Blueprint for Technical Infrastructure

Selected System Specifications

System/Component	Parameter	Specification	Source/Standard
Cisco Catalyst 9800	Key Features	Wi-Fi 6 certified, OFDMA, MU-MIMO, BSS Coloring, Cisco RF ASIC	Manufacturer Spec Sheet
Eaton 9PX UPS	Thermal Dissipation	Online+Charging: 900 BTU/hr; OnBattery: 2000 BTU/hr	DOCA0128EN-02
High Voltage Systems	Channel Capacity	$C = M \cdot B \cdot \log_2(1 + \text{SNR})$	Shannon-Hartley Theorem
Motor Control	Phase Imbalance Trip	Threshold: 10...70 %; Timeout (running): 0.2...20 s	TeSys T LTMR Guide

The engine creates a living, queryable model of physical systems, ensuring every component and behavior is documented and verifiable.

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Application: The Credential-Linked Record Book

Date	Institution / Platform	Item / Module	Final Cost	Award / Certificate	Integration Points
2025-10-08	Shoprite / Elektor	Elektor Starter Kit	R360	Electronics Fundamentals	GitHub + SAQA/NQF dashboard
2025-10-08	Schneider Electric	Smart Panel	R10,000	Energy Mgmt Compliance	GitLab + Azure DevOps billing
2025-10-08	ECSA / Home Affairs	Engineer Registration	R1,000	Registered Professional Engineer	CCMA + Master Court archive

2025-10-08	SASSETA / CCMA	Labour Law Training	R800	Workplace Dispute Resolution	MERSETA + Home Affairs log
2025-10-08	Atlantic Intl. University	MBM302 Master Thesis	\$300	Master of Eng. – Thesis Accepted	IJETR3156 – Accepted, AIU Library
2025-10-08	GitHub / Azure DevOps	CI/CD Pipeline Sub	\$60	Trailblazer Superbadge	GitLab audit log

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Outcome: Data-Driven Career and Cost Analysis

Total Cost Analysis by Category				Neue Haas Grotesk Display Pro Roman	
Category	Total Sale Price	Total Amendment	Total Final Cost		
Education	R800	-R190	R610		
Engineering Systems	\$570	-\$190	\$380		
Energy Compliance	R15,200	-R2,800	R12,400		

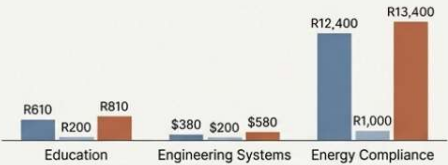
Statistical Award Balance					Neue Haas Grotesk Display Pro Roman	
Award Type	Count	% of Total	Avg Final Cost	Avg Library Usage		
Electronics Fundamentals	1	10%	R360	3h		
Contributor Badge	1	10%	\$80	3h		
Registered Engineer	1	10%	R1,000	4h		

The system provides a quantitative, holistic view of professional investment and achievement over time.

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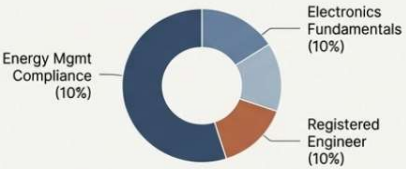
Outcome: From Raw Data to Strategic Insight

Total Cost Analysis



Category	Total Final Cost	Booking Cost	Net Cost
Education	R610	R200	R810
Engineering Systems	\$380	\$200	\$580
Energy Compliance	R12,400	R1,000	R13,400

Statistical Award Balance



Award Type	% of Total	Avg Final Cost	Avg Library Usage
Electronics Fundamentals	10%	R360	3h
Registered Engineer	10%	R1,000	4h
Energy Mgmt Compliance	10%	R10,000	3h

By structuring educational data, the Engine enables powerful analytics on cost, time investment, and competency distribution, turning a learning history into an actionable dashboard.

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The Didactic System in Action: From Lab Modules to Workplace Integration

Developing practical, hands-on learning experiences that are directly aligned with industry needs and qualification requirements.

Vocational Training Modules

- Detailed electrician trade modules: Safety (5S System, Fire Triangle), Hand Tools (Pliers, Screwdrivers per BIS standards), AC/DC Circuits, Earthing (per SABS 0142), and Workshop Practice.

Work-Based Learning (WBL) Models

- Designing apprenticeship models that integrate college education with practical company experience, referencing tripartite agreements (learner, employer, provider).

Psychometric & Aptitude Testing

- Integration of assessments (Mechanical Aptitude, Logical Reasoning) to align learner capabilities with career pathways.

Sample Weekly Instruction Flow: Electrician Apprentice

Day	Theoretical Focus (College)	Practical Application (Workshop)
Monday	Safety Regulations & SABS 0142 (Earthing)	Workshop Safety Tour & 5S System Implementation
Tuesday	Ohm's Law & Basic DC Circuits	Building and testing simple series/parallel circuits on breadboard
Wednesday	Hand Tool Identification & BIS Standards	Practical exercise: Filing, hacksawing, and drilling techniques
Thursday	Introduction to AC Waveforms	Workshop practice: Coil winding and termination
Friday	Weekly Review & Formative Assessment	Practical skills validation and logbook entry

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Exhibit B: The Billion-Rand Anomaly

Tshingombe - Trial Balance - As at 31 July 2023		
Bank Accounts	Expense	103,370,257.00
Bank Accounts	Expense	373,709,020.00
Revenue	Expense	5,300,960,000.00
Current Liabilities	Current Asset	1,503,355,235.80
Consulting & Accounting	Expense	3,453,405,767.00
Freight & Courier	Expense	2,000,980,000.00
Accounts Receivable	Current Asset	7,172,556,133.80
Accounts Receivable	Current Asset	767,256,137.80
Current Liabilities	Current Asset	1,480,445,333.80
Current Liabilities	Current Asset	12,372,956,133.80
Consulting & Accounting	Expense	312,500,000.00
Accounts Receivable	Expense	2,100,000.00
Capital Inc.	Expense	842,500,000.00
Bank Accounts	Expense	1,383,875,007.00
Bank Accounts	Expense	50,870,000.00
Bank Accounts	Expense	50,500,000.00
Communication & Logistics	Expense	212,500,000.00
Current Assets	Expense	628,330,000.00

Tshingombe - Foreign Currency Gains and Losses - From 1 August 2023 to 31 August 2023		
Currency	Currency	Amount
Realised Gains	EUR	132,856,102.00
Unrealised Gains	EUR	+3,000.00
Total Gains	\$	1,283,897,668.00
Unrealised Gains	US	-3,000.00
Total Losses	\$	2,503,328,068.00
Total Accounts Receivable		9,129,789,627.16
Total Losses	USD	-17,879,813.80
Unrealised Gains	\$	0.00
Total Currency	USD	4,137,366,855.30

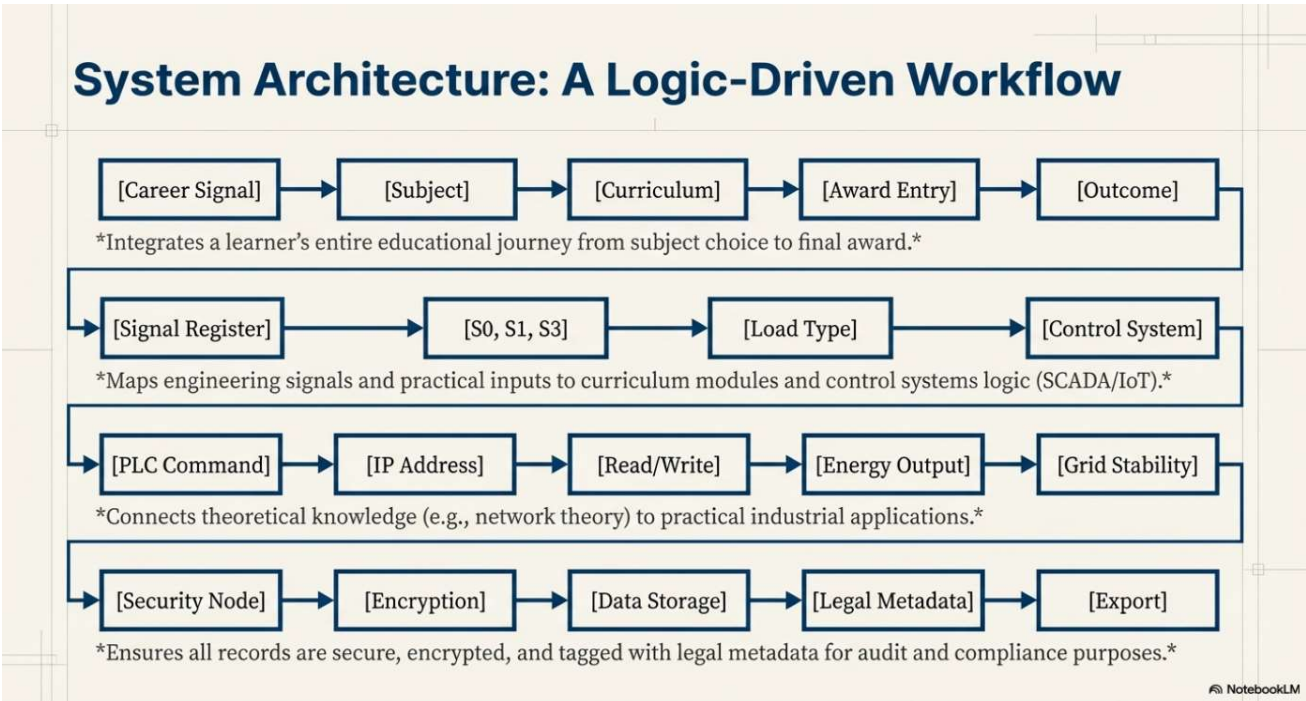
Analyst's Note: These figures appear in personal accounting documents. Are they records of actual transactions, components of a complex economic simulation, or placeholders for a planned enterprise? The data provides no clear answer.

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The Building Blocks: A Modular Record Taxonomy

Integrating Diverse Data Streams into a Coherent Microsoft Ecosystem

Taxonomy Category	Microsoft Feature / Platform		Integration Opportunity
Academic Records	 Microsoft Learn	Microsoft Learn, Transcript Export	Sync course completions from DHET, Alison, etc. to a unified profile for export to GitHub or LinkedIn.
Technical & Practical Records	 Azure DevOps	Azure DevOps, GitLab Repositories	Log project work (City Power, Eskom), IP licenses, Tableau dashboards, and experimental logbooks. Track CI/CD pipelines.
Legal & Complaint Records	 SharePoint	SharePoint, Azure Compliance	Securely store and tag affidavits, re-marking requests, FOI correspondence (Met Police), and communications with DHET/SAQA for audit trails.
Financial & Cost	 Power BI	Power BI, Azure Data Lake	Automate a 'Cost and Discovery Ledger' to



Evidence of Application: Technical Data for High-Reliability Systems

Key Data Tables from MIL-STD-11991B for Audit-Ready Implementation

Table 1: PM&P Incoming Inspection Data Requirements (Appendix H)

Requirement	EEE parts	Mechanical parts	Notes
Database fields maintained for life	Yes	Yes	Lot date code, P.O. requirements, C of C data
Documented procedures for incoming tests	Yes	Yes	Define sampling, methods, acceptance criteria
Radiological inspection (X-ray)	Yes	Yes	Internal defects
DPA (Destructive Physical Analysis)	Required (one per lot)	—	See MIL-STD-1580
PIND (Particle Impact Noise Detection)	Categories A–C, T	—	Hermeticity/loose particles

Table 2: Microcircuit Derating Factors (Appendix A)

Critical Stress Parameter	Digital	Linear	Notes
Maximum Supply Voltage	0.90	0.80	Do not exceed 90% of max rating
Power Dissipation	0.80	0.75	Limit to 80% (digital), 75% (linear)
Max Junction Temperature	40°C below max	40°C below max	Applies across all devices

Applying Derating Factors is Critical for Ensuring Long-Term Component Reliability

Microcircuit Derating Factors (Table AVI)		Capacitor Derating Factors (Table AI)	
Max Supply Voltage	0.90 (Digital), 0.80 (Linear)	Voltage Derating Factor	0.50 (for Ceramic, Glass, Film, Mica, Tantalum)

Power Dissipation	0.80 (Digital), 0.75 (Linear)
Max Junction Temp	40°C below max rating

Max Case Temperature	20°C below max rating (most types)
Aluminum Electrolytic	Not allowed

EMI Filter Derating Factors (Table AIV)	
Rated Current	0.75
Rated Voltage	0.50
Max Operating Temp	30°C below manufacturer's max

Optoelectronic Device Derating Factors (Table AVII)	
Power Dissipation	0.50
Forward Current / Voltage	0.70
Max Temperature	30°C below max

Why It Matters

Derating is a proactive engineering practice that prevents premature failure by ensuring components operate well below their maximum stress limits. This is fundamental to building systems that are not just functional, but survivable.

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Technical slide

MODULE A: EDUCATIONAL ADMINISTRATION & CURRICULUM

Name: Candidate A

Status: Active

Curriculum Matrix			
	Code	Grade	Credits
1	N1 Electrical Trade Theory	PASS	0.3
2	N3 Electro-Technology	DISTINCTION	0.3
3	N4 Engineering Science	PENDING	-

Attendance Metrics	
Days Present: 340 / 360	Attendance Rate: 94.4%

Irregularity Status: CLEAN

DESIGN FOCUS: LEGACY PRESERVATION—Ensuring institutional memory survives beyond the current user.

APR 2024
Deployment Note: Modular architecture supports incremental upgrades and seamless integration with existing infrastructure.

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Pillar I: A Rigorous Academic and Aptitude Foundation

Formal Qualifications

- National NATED Diplomas (N1-N6) in Electrical Engineering:** A comprehensive vocational education covering foundational to advanced concepts.
- SAQA Registered Qualifications:** Including National Certificates in Electrical Engineering (e.g., SAQA ID: 67375, 66960).
- Core Subjects Studied:**
 - Mathematics (N1-N4)
 - Engineering Science (N1-N4)
 - Industrial Electronics (N1-N4)
 - Electrical Trade Theory
 - Electrotechnics & Electrotechnology
 - Power Machines
 - Engineering Drawing

Career Aptitude Assessment

Validated Aptitude for Technical and Scientific Fields.

GoStudy.net results:

Engineering

100%

Science and Mathematics

100%

Information Technology

100%

Finance

100%

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Pillar II: Mastery of Core Engineering Principles

A profound understanding of the mathematical and physical laws governing electrical systems is the bedrock of effective engineering. This selection of applied formulae demonstrates mastery across key domains.



Circuit Theory

Kirchhoff's Laws:
 $E_T = I_1 \cdot R_1 + (I_1 - I_2) R_3$

Thévenin/Norton Equivalents



AC/DC Machines

Synchronous Motor Equations:
 $V = E_b + I_a(R_a + jx_s)$

DC Motor Equations:
 $N = \frac{v - I_a R_a}{k \cdot \phi}$



Transformers

Voltage Regulation:
 $\% \text{ reg} = \frac{V_{(\text{no-load})} - V_{(\text{full load})}}{V_{(\text{no-load})}} \times 100\%$

Turns Ratio:
 $\frac{N_1}{N_2} = \frac{V_1}{V_2}$

Three-Phase Connections (Star-Delta)



Electromagnetism

Biot-Savart Law:
 $d\vec{B} = \frac{\mu_0 \cdot I \, d\vec{s} \times \hat{r}}{4\pi r^2}$

Faraday's Law:
 $E = -\frac{\Delta\Phi}{\Delta t}$



Calculus & Advanced Mathematics

Differential Equations:
 $\frac{dy}{dx} + P(x)y = Q(x)$

Integration for Volume:
 $V = \int \pi[y(x)]^2 \, dx$

Limits:
 $\lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n = e$

The Implementation Roadmap: A Phased Approach to Systemic Change

Year 1

Pilot & Refine

Action: Implement the integrated curriculum and assessment model in select Electrical Engineering programs at partner TVET colleges (one rural, one urban).

Goal: Validate the model, gather data on learner outcomes, and refine content based on feedback from lecturers and industry partners.

Year 2

Develop & Deploy Technology

Action: Build and deploy the core Assessment Management and Qualification Validation system based on the prototyped VBA logic. Integrate virtual lab components.

Goal: Streamline administrative processes, reduce backlogs, and provide a transparent platform for all stakeholders.

Year 3 onwards

Scale & Collaborate

Action: Establish a national TVET Forum for engineering trades, in collaboration with UNESCO-UNEVOC. Begin a phased national rollout of the framework and technology platform.

Goal: Promote system-wide adoption, facilitate knowledge sharing, and ensure the long-term sustainability and responsiveness of the system.

Pillar 1: A Unified Curriculum Built on Rigorous Engineering Principles

Advanced Theoretical Core

From Electrotechnics N6 Syllabus

- Line Frequency Phase Controlled Rectifiers
- DC-DC Switch Mode Converters

Mathematical Foundations

Core Power System Formulae

$$S = P + jQ$$

Structured Learning Pathways

SAQA NQF Alignment

Title	Details
Qualification	National Certificate: Electrical Engineering

- Pulse-Width Modulation (PWM)
- Three-phase systems and transformers

Unified Curriculum & Assessment

$$|S| = \sqrt{P^2 + Q^2}$$
$$\text{Power Factor: } \cos(\theta) = \frac{P}{|S|}$$
$$P = \sqrt{3} \times V_l \times I_l \times \cos(\theta)$$

Electrical Engineering
Level & Credits
NQF Level 3, 133 Credits
Structure
Core, Fundamental, and Elective Components
Specializations
Mining, Renewable Energy, Electrical Construction

Automation Translates Theory into Practical Tools for Assessment and Auditing

Quiz Process

Load questions

Present question

Capture response

Check correctness

Log result

Compute marks

Export summary

VBA Module Structure

Data Model (`modQuiz`)

```
Public Type QuizItem
    Id As Long
    Question As String
    Options(1 To 4) As String
    CorrectOptionIndex As Integer
    Explanation As String
End Type
```

Controller (`RunQuiz`)

Manages the quiz flow, prompting for input and scoring responses.

User Interface (`frmQuiz`)

A user form with controls (labels, option buttons, command buttons) to present the quiz visually.

Export (`modExport`)

```
ws.Range("A1:E1").Value = Array("ItemId", "SelectedIndex", "IsCorrect", "Timestamp", "Explanation")
```

Navigating the Qualification Maze: A Fragmented Pathway

N1 Studies

N2 Studies

N3 Studies

N4 Studies

- Industrial Electronics
- Electrical Trade Theory
- Engineering Science
- Electrotechnology
- Mathematics

N5 Studies

- Industrial Electronics
- Electrical Trade Theory
- Engineering Science
- Electrotechnology
- Mathematics

N6 Studies

- Industrial Electronics
- Electrical Trade Theory
- Engineering Science
- Electrotechnology
- Mathematics

National N. Diploma

Requirement: National N. Diploma (SAQA ID 90674) requires 360 credits: 180 from theoretical studies (N4-N6) + 180 from 18-24 months of documented, relevant workplace experience.

When examination and assessment irregularities disrupt this sequence, the entire framework fails the learner, rendering both theoretical and practical efforts unrecognized.

tshingombusiness
South Africa
tshingombefiston@gmail.com

To
Atlantic international
university

Statement of Accounts

2025/03/01 To 2026/02/28

Account Summary	
Opening Balance	R 0.00
Invoiced Amount	R 110,020,000.00
Amount Received	R 0.00
Balance Due	R 110,020,000.00

Date	Transactions	Details	Amount	Payments	Balance
2025/03/01	***Opening Balance***		0.00		0.00
2026/01/07	Customer Opening Balance		10,000,000.00		10,000,000.00
2026/01/16	Invoice	INV-000003 - due on 2026 /02/28	100,020,000.00		110,020,000.00
			Balance Due		R 110,020,000.00

tshingombusiness
South Africa
tshingombefiston@gmail.com

INVOICE
INV-000003
Balance Due

R100,020,000.00

Invoice Date :2026/01/16

Terms :Due end of next month

Due Date :2026/02/28

P.O.# :Portfolio

Bill To

Atlantic international university

Subject :
Refund research fund award curriculum

#	Item & Description	Qty	Rate	Amount
1	engineering tshingombe engineering portofolio build curriculum	1.00 kg	100,000,0 00.00	100,000,000.00
2	2000 Engineering	1.00	20,000.00	20,000.00
Sub Total				100,020,000.00
Total				R100,020,000.00
Balance Due				R100,020,000.00

Notes
Looking forward for your business.

Terms & Conditions
Fund record award

The Credential Dashboard: A Single Source of Truth

The result is a dynamic, auditable dashboard that integrates academic, vocational, professional, and legal records. It provides a comprehensive, evidence-backed view of competencies, achievements, and experiences, aligned with national and international frameworks like SAQA, NQF, and CPD.

Credential-Linked Record Book – Tableaux Line Format (Snapshot: 2025-10-08)

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2025-10-08	Alicon Learning	Diploma in EE	\$92 35	CPD Diploma	-	SAQA/NQF + GitHub

2025-10-08	Anson Learning	Diploma in EE	\$75.55	CPD Diploma	-	SAQA/NQF + GitHub
2025-10-08	ECSA/Home Affairs	Engineer Registration	R1,000	Registered Engineer	-	CCMA + Court Archive
2025-10-08	SASSETA/CCMA	Labour Law Training	R800	Dispute Resolution	-	MERSETA + Home Affairs
2025-10-08	Blockchain Academy	DLT Credentialing Module	\$140	Certificate – Blockchain in Education	150 pts	GitHub + ORCID Registry + SAQA/NQF
2025-10-08	Quantum Systems Lab	Quantum Algorithms & Circuits	\$120	Certificate – Quantum Optimization	150 pts	GitHub + SAQA/NQF + ORCID Registry

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Extending the Model: Data Science and Behavioral Analytics

The system's analytical core can be extended to model complex behaviors. By fusing user interaction data, we can build recommendation engines and gain insights into e-commerce, AGI collaboration, and human-machine teaming. This demonstrates the power of a unified data architecture.

Fusion of User Behavior

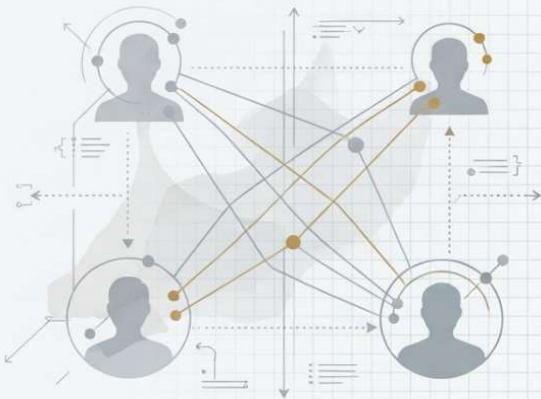
$$F_{ui} = w_o O_{ui} + w_a A_{ui} + w_b B_{ui}$$

Weighted formula combining order, following, and browsing data to create a unified user behavior vector.

Cosine Similarity for User Fusion

$$S_f(u, v) = \cos(\theta) = \frac{F_u \cdot F_v}{\|F_u\| \|F_v\|}$$

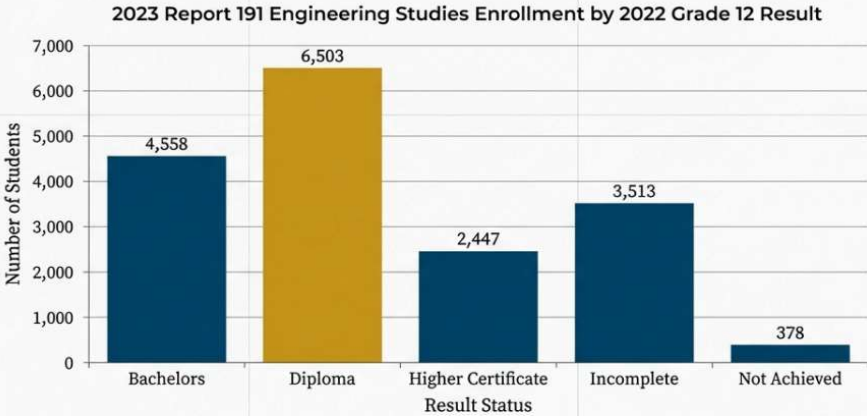
Measuring the similarity between user behavior vectors to enable personalized recommendations.



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Data Insights: Mapping Educational Outcomes to TVET College Enrollment

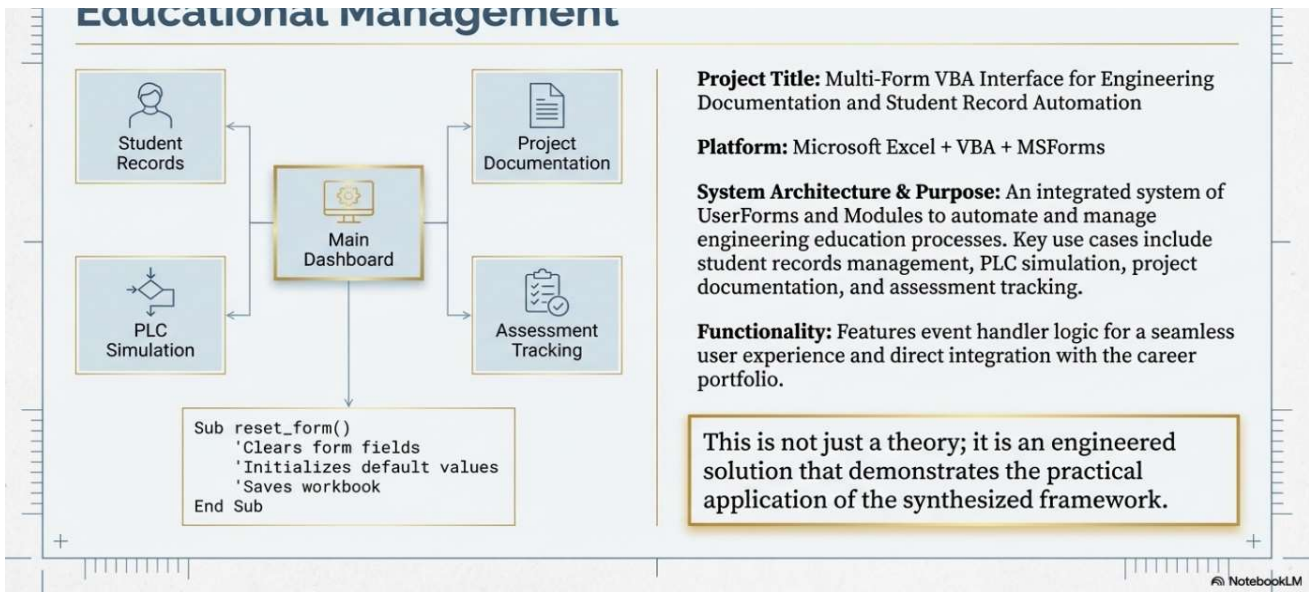
Analysis of 2023 TVET college entrants who wrote Grade 12 in 2022 reveals critical trends. A significant portion of students enrolling in Report 191 Engineering Studies held either a Diploma-level pass or had incomplete results, highlighting the need for structured pathways and robust support systems.



Over 17,700 students entered Engineering Engineering Studies, with the largest group (6,503) having a Diploma pass, indicating a strong demand for applied technical education.

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The Framework in Practice: An Automated System for Educational Management



Pillar 1 in Action: Anchoring Curriculum in Global Standards

NATED N4-N6 Subject	Mapped to Real-World Application & Standard
Industrial Electronics	Selecting and derating components per MIL-STD-11991B, Appendix A.
Supervisory Management	Leading technical teams to ensure compliance with IPC-6010 Class 3 fabrication standards.
Control Systems	Designing feedback loops that meet the environmental stress requirements of MIL-STD-810H.
Installation Rules	Applying SANS 10142-1 wiring codes in environments requiring MIL-STD-461 EMC controls.

The curriculum is not just a list of subjects, but the **foundation** for applying world-class engineering practices.

Pillar 2: Achieving Total Traceability through Automation

The system's backbone is an automation engine built with **Visual Basic (VBA)**. It transforms manual, error-prone administrative tasks into a transparent, real-time, and audit-ready digital process.

System Features

- Logigrams & Allogigrams:** Automate workflows for assessment, compliance, and even disciplinary procedures.
- Credential-Linked Dashboards:** Provide live tracking of learner progress, awards, and costs.
- Audit-Ready Exports:** Generate bilingual (English/French) traceable records for

```
Sub GenerateReport()  
    Dim wb As Workbook  
    Set wb = ThisWorkbook  
    Dim ws As Worksheet  
    Set ws = wb.Sheets  
    Dim chartObj As Chart  
    For Each chartObj In  
        chartObj.Charts  
    Next chartObj  
    Dim pdfPath As String  
    pdfPath = w  
    ws.ExportA  
    ws.Export  
    MsgBox "Audit Re  
End Sub
```

Function GetLearnerProgress(learnerID AS VARCHAR(100))
'Code to calculate progress
End Function

Sub UpdateDashboardData()
'Refresh data from database
End Sub

Report

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Pillar 3: Integrating Multiple Disciplines for Holistic Problem-Solving

“Specialization is for insects.”

Modern challenges are rarely confined to a single domain. The framework integrates core engineering with ICT, data science, public safety, and financial management to produce versatile professionals who can connect dots and see the whole system.

ICT & 4IR

Safety & Security

Trade & Finance

Education & Assessment

Electrical Engineering

• ICT & 4IR

• Safety & Security

• Education & Assessment

• Trade & Finance

NotebookLM

The Output: An Audit-Ready Credential Record Book

The framework culminates in a comprehensive, traceable record of a learner’s entire professional journey. This Portfolio of Evidence (PoE) links every qualification, project, and cost into a single, verifiable ledger, providing irrefutable proof of competence for employers, institutions, and regulatory bodies.

Date	Institution	Item / Credential	Cost	Amendments	Final Balance	Integration Points
2023-12-31	Schneider Electric	EcoStruxure Expert Cert.	R0.00	N/A	R0.00	Mapped to NQF 5; Linked to PoE
2022-12-01	Microsoft	Azure AI Fundamentals	R1,500.00	(R500 Grant)	R1,000.00	Linked to GitHub Repo; 4IR Skills
2025-07-21	SQA	SCQF Level 6 Award	R3,000.00	N/A	R3,000.00	International Benchmark; Articulation Pathway
2024-01-01	DHET	National N Diploma (N6)	R12,000.00	N/A	R12,000.00	SAQA ID 111285; Linked to Logbook
2025-12-01	IJETR	Research Publication	R500.00	N/A	R500.00	ORCID Linked; Professional Contribution

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Pillar 3: Generating Audit-Ready Proof of Competence

The framework culminates in the production of standardized, evidence-backed documents that map skills to formal requirements. These artifacts are designed for clarity, verifiability, and immediate use in assessment and moderation.

Audit-Ready Checklist Template						Competency Matrix (NATED/NCV Mapping)			
Asset ID	Standard Applied	Test Method	Result	Signatures	Evidence Links		Knowledge	Application	Troubleshooting
PWB-001	IPC-6010 Class 3	Sectioning Analysis	Pass	[Digital Signature]	[Link to Report]		✓	✓	✓
							✓	✓	✓
							✓	✓	
							✓	✓	✓

Direct access to raw test data & reports

Demonstrates practical problem-solving ability

PROJECT: N-DIPLOMA FRAMEWORK // DRAWING NO: ELEC-ENG-013

Pillar 1: Integrating World-Class Standards into the Core Curriculum		
True mastery connects academic knowledge to the highest industry and military standards. Each subject in the N4-N6 curriculum becomes a platform for applying principles of reliability, safety, and environmental robustness.		
N-Diploma Subject (N4-N6)	Linked Standard/Concept	
Industrial Electronics (N4-N6)	→ Component Derating Factors (MIL-STD-11991B, Appendix A) → PIND Testing (MIL-STD-202G, Method 217A)	
Power Machines (N5-N6)	→ EMC/EMI Considerations (MIL-STD-461) → Fungi Susceptibility of Materials (MIL-STD-11991B, Table XXXI)	
Control Systems (N6)	→ Contact Chatter Monitoring (MIL-STD-202G, Method 310)	
Installation Rules (N6)	→ SANS 10142-1 Compliance → Wiring & Terminal Strength (MIL-STD-202G, Method 211A)	

Direct application of principles

PROJECT: N-DIPLOMA FRAMEWORK // DRAWING NO: ELEC-ENG-011

Blueprint in Action I: The Competency Matrix			
The framework translates academic learning into verifiable, industry-aligned competencies. It explicitly maps NATED curriculum modules to the specific standards and practices required in high-reliability sectors.			
NATED N6 Module	Key Concepts	Linked Industry Standard	Verifiable Skill / Artifact
Industrial Electronics	Diodes, Transistors, Rectifiers	MIL-PRF-19500 (Semiconductors)	Ability to select JANTX-level components for a given design
Control Systems	PID Controllers, Feedback Loops	IEC 61508 (Functional Safety)	Design and document a control loop with a specified Safety Integrity Level (SIL)
Power Machines	Transformers, AC/DC Motors	MIL-STD-11991B, App. A	Apply derating factors for motor loads in a power budget calculation
Installation Rules	Earthing, Bonding, Protection	SANS 10142-1:2024	Create a Certificate of Compliance (CoC) for a sample installation

Engineering system

ENGINEERING SYSTEM DESIGN ARCHEOLOGY RESILIENCE NEXT GENERATION

Engineering next generation

FILES REGISTER STUDENTS TRADE
PRINT PROGRAMM STUDENT YEARS , PRINT PROGRAM STUDENT, OUTPUT INPUT STUDENT EARS FILES OUTCOME ENTRY STUDENT EXHIBIT FILES STUDENT
IF STUDENT MALE FAMILY , PRINT STUDENT AMOUNT COST FEE PRINT RECORD KEEPING STUDENT STATEMENT PROGRESS PRINT STUDENT PROGRESSION CAREER PRINT SEMESTER CAREER STUDENT PROGRESSION DEEPIING PRINT NEXT YEARS RECORD
STUDENT PRINT STUDENT PRINT STUDENT RESILIENCE PROGRESS ACADEMIC RECORD AND APPLICATION STUDENT NEXT GENERATION TOTAL RECORD GUIDANCE FACULTY GUIDANCE GRAND TOTAL COURSE PRINT STUDENT, PRINTED CAPTCHA
PROGRESS STUDENT YEARS , YEARS IQ INTELLECTUAL QUOTIENT GUIDANCE CAREER CHOICE , PROPRIETY

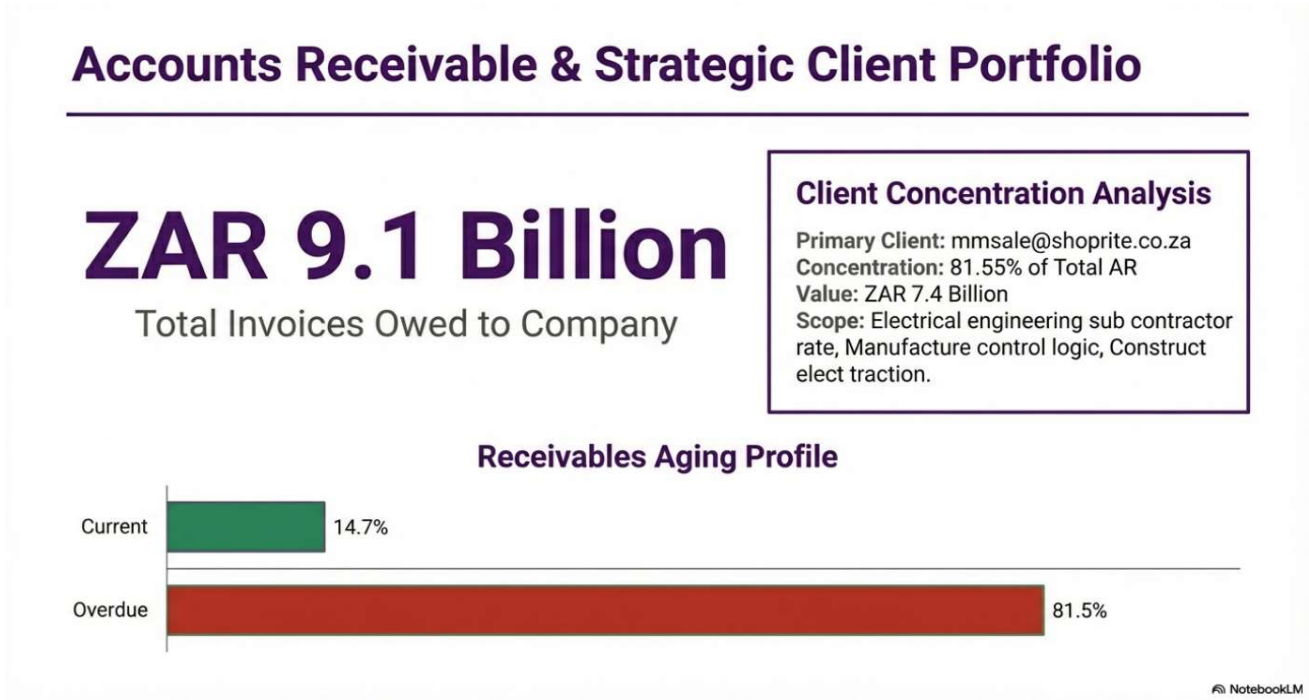
Financial Position: Balance Sheet Overview

As at 13 August 2023

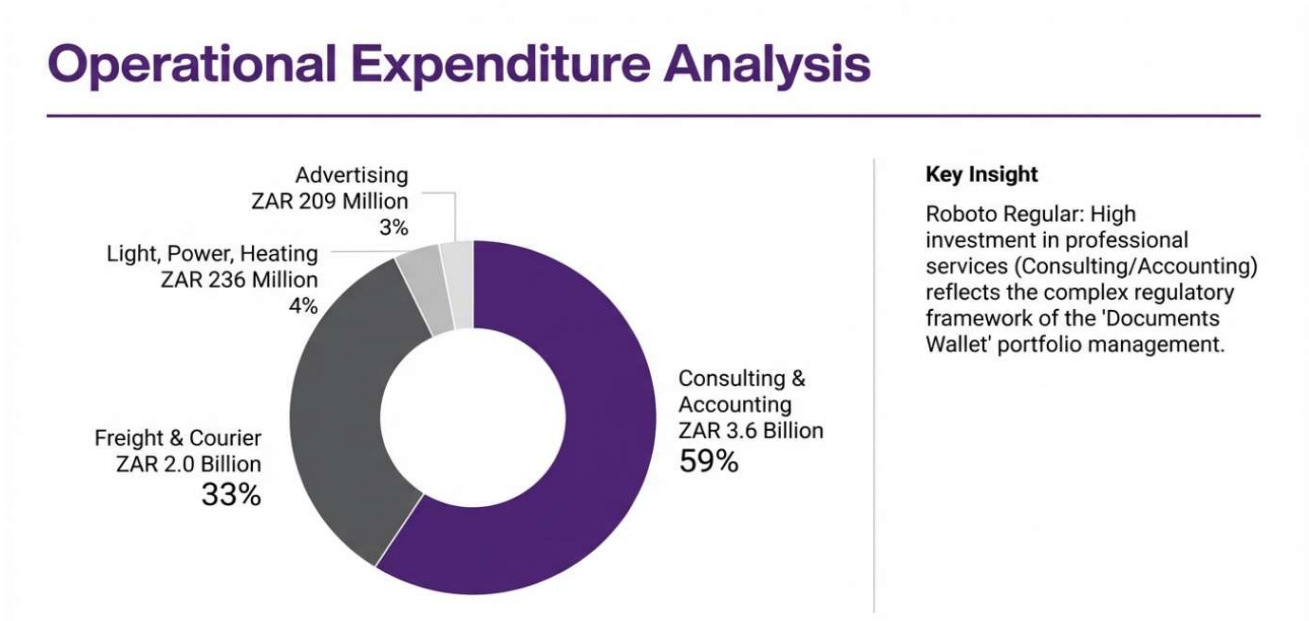
Helvetica Now Display Bold	Total Liabilities
Total Assets	Total Liabilities
ZAR 9,095,690,296	ZAR 1,494,094,341
Primary Driver: Accounts Receivable (~R7.1B)	Includes VAT Owing (~R889M)
	Total Equity
	ZAR 7,601,595,955

Strong equity position driven by high-value accounts receivable portfolio.

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Diverse Asset & Inventory Portfolio

Tangible Industrial Assets

- Cable port USB, fibre optic
- AC/DC machine motor
- Drilling, turning, foundry equipment
- Substation construction materials

Intangible & Intellectual Property

- Fiscal fraud detection tools
- Database intelligence robot
- Biotech genie software
- Copyrights: Engineering chemistry & physics

Technology Stack & Digital Certifications

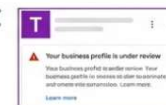


Partnerships & Tools

- Google Wallet API / Play Academy
- Xero Financial Management
- Webassessor Exam Delivery

Credential Status

- Google Play Store Optimization Exam: Passed
- REST API Access: Registered
- Business Profile Status: Under Review



Strategic Outlook: Beyond the Documents Wallet

FY2024 Roadmap

PUBLISH

Transition **Google Wallet** integration from Demo to

COLLECT

Realize **ZAR 9.1 Billion** in outstanding Accounts

EXPAND

Scale **'Instruct'** and **'Manufacture'** verticals

integration from Demo to
Live environment.

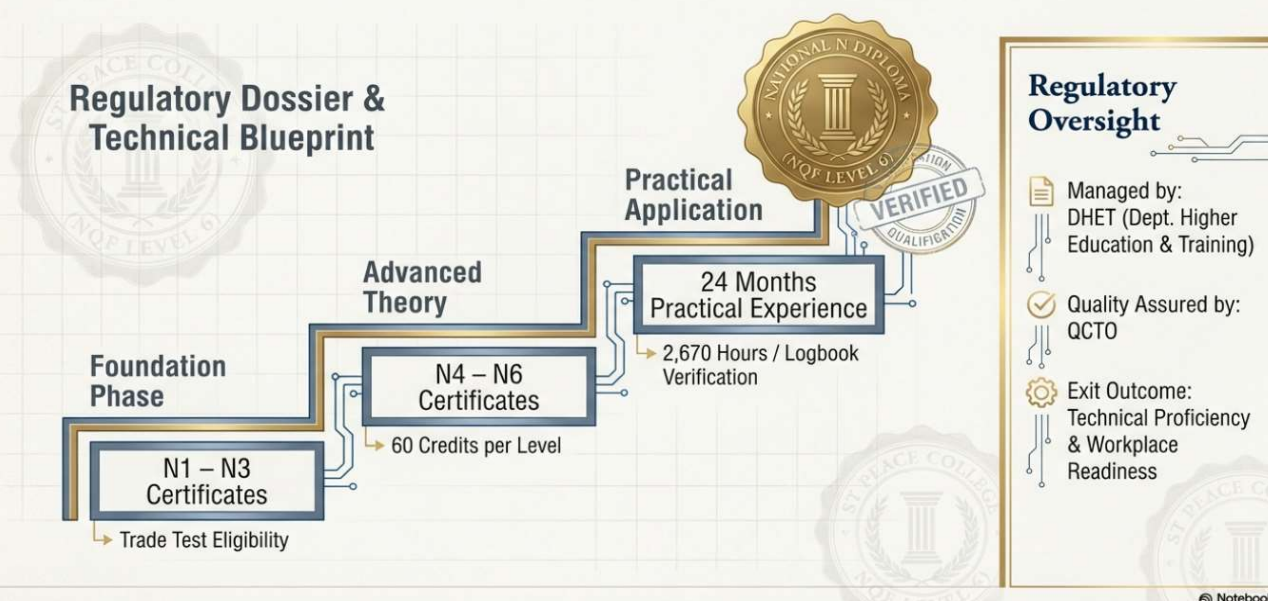
outstanding Accounts
Receivable (Shoprite).

Manufacture verticals
globally.

READY FOR PUBLISHING ACCESS.

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The National N Diploma Framework (NATED Report 191)



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Transcript Analysis: Engineering Studies N1–N6

Subject / Module	Weighting	Submission ID	Status
Mathematics	Core	2024-02-12 11:36	Submitted ☑
Engineering Science	Core	2023-06-03 09:56	Pending ☹
Industrial Electronics	Core	2023-03-11 13:45	VERIFIED
Electro-technics	Core	2022-07-12 13:31	VERIFIED
Direct Current Theory	30%	Internal	Pass ☑
Wiring of Premises	25%	Internal	Pass ☑

Date Submitted to DHET: 11/05/2023

Timetable Ref: /50111002

Pass Requirement: 40% per Module

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MODULE D: INTELLECTUAL PROPERTY & LEGACY ARCHIVING

ARCHIVE INDEX CARD // DATA RECORD

Profile Name:	Rdferz
Member Since:	2022
Total Uploads:	101 Items
Top Asset:	Examination Tshingombe Diplomat (2.6K Views)
IP Reference:	EN 0202272 (ID Elektor)
Legal Depot:	Tshingombe Rural Energy Items

CRYPTO-DONATION RECEIPT
// TRANSACTION LOG

Booking Fee:
\$0.69 USD

Blockchain Hash:
0x4F9E2B7ABC3D1F0E566H7I8
J9KDL1M2N3O4P5Q6R7S8T9UDV
1W2X3Y4Z 0x4F9E2B7ABC8C3D
1FF8E566H7I8J9KDL1M2N3O4P
5Q6R7S8T9UDV1W2X3Y4Z

0:22:30
2:11:00

DESIGN FOCUS: INTELLECTUAL PROPERTY & LEGACY ARCHIVING | APR 2024 | MODULE D | TECH SPEC

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THE TECHNICAL ENGINE: VBA & EVENT LOGIC

' Kfrm1: Initial Registration & Validation
Private Sub cmdNext_Click()
If txtName.Text = "" Or txtID.Text = "" Then
MsgBox "Please complete all fields.", vbExclamation
Else
' Transition to Address Form
Kfrm2.Show
Me.Hide
End If
End Sub

' Financial Logic: Discount Calculation
Private Sub cmdCalculate_Click()
subtotal = qty * price
total = subtotal * (1 - discountRate / 100)
txtTotal.Text = Format(total, "Currency")
End Sub

Modular Code Structure:
Validation, Calculation,
Navigation.

CODE EDITOR WINDOW // VBA SCRIPTING INTERFACE

0:22:30
2:11:00

DESIGN FOCUS: VBA & EVENT LOGIC | APR 2024 | MODULE E | TECH SPEC

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THE PEDAGOGICAL FOUNDATION

16:9 aspectry ratio: Phenomenology Meets Engineering Logic



Shifting learners from intuitive misconceptions to rigorous scientific models through **cognitive conflict** and analogies.

Mechanism: Shifting learners from intuitive misconceptions to rigorous scientific models through cognitive conflict and analogies.

SYSTEM STATUS: CONCEPTUAL INTEGRATION ✔ BILINGUAL DASHBOARDS ✔ AUDIT COMPLIANT ⚡

SYSTEM INPUT: PSYCHOMETRIC PROFILING

PERSONALITY
15FQ+ Traits:
Resilience, Teamwork

COGNITIVE CONTROL
Stroop Tasks, AX-CPT,
Reaction Times

INTEGRITY
Values,
Counterproductive
Behavior Screening

READINESS INDEX
= (Cognitive * 0.4)
+ (Personality * 0.3)
+ (Integrity * 0.3)

Grade Rank
HIGH
READINESS

SYSTEM STATUS: PROFILE INTEGRATION ✔ BILINGUAL DASHBOARDS ✔ AUDIT COMPLIANT ⚡

THE LOGIC ENGINE: VBA | AUTOMATION

Logigram: Maps Entry Pathways

PsychScore > 80?

Yes

TradeTest > 85?

Yes

Senior Cadet

No

Junior Entry

Algorigram: Tracks Learner Autonomy

```
1  
2  
3  
4  
5 If PsychScore >= 80 And TradeTest >= 85 Then  
6   AssignJobClass = 'Senior Cadet'  
7 ElseIf PsychScore >= 65 Then  
8   AssignJobClass = 'Junior Entry'  
9 End If  
10
```

SYSTEM STATUS: VBA LOGIC INTEGRATION ✔ BILINGUAL DASHBOARDS ✔ AUDIT COMPLIANT ⚡

TECHNICAL INTEGRATION: THE LIBRARY

Industry Manuals as Career Drawing Material







EcoStruxure Building Expert

Acti 9 Circuit Breakers

Modicon PLCs

xSpider 3 9.1 Manuals

Aerospace Hydraulic Systems

Transmission Service Bulletins

Power Platform Architecture

.NET Developer Docs



Application:
Real-world manuals serve as cognitive tools for document literacy and trade test preparation.

SYSTEM STATUS: TECHNICAL INTEGRATION: THE LIBRARY ✓ BILINGUAL DASHBOARDS ✓ AUDIT COMPLIANT ⚡

PANEL-BASED TEACHING & TRADE TESTING

PLC Unit

Wiring Harness

Circuit Breakers

HMI Interface

SIMULATION
VBA-driven reaction time calibration

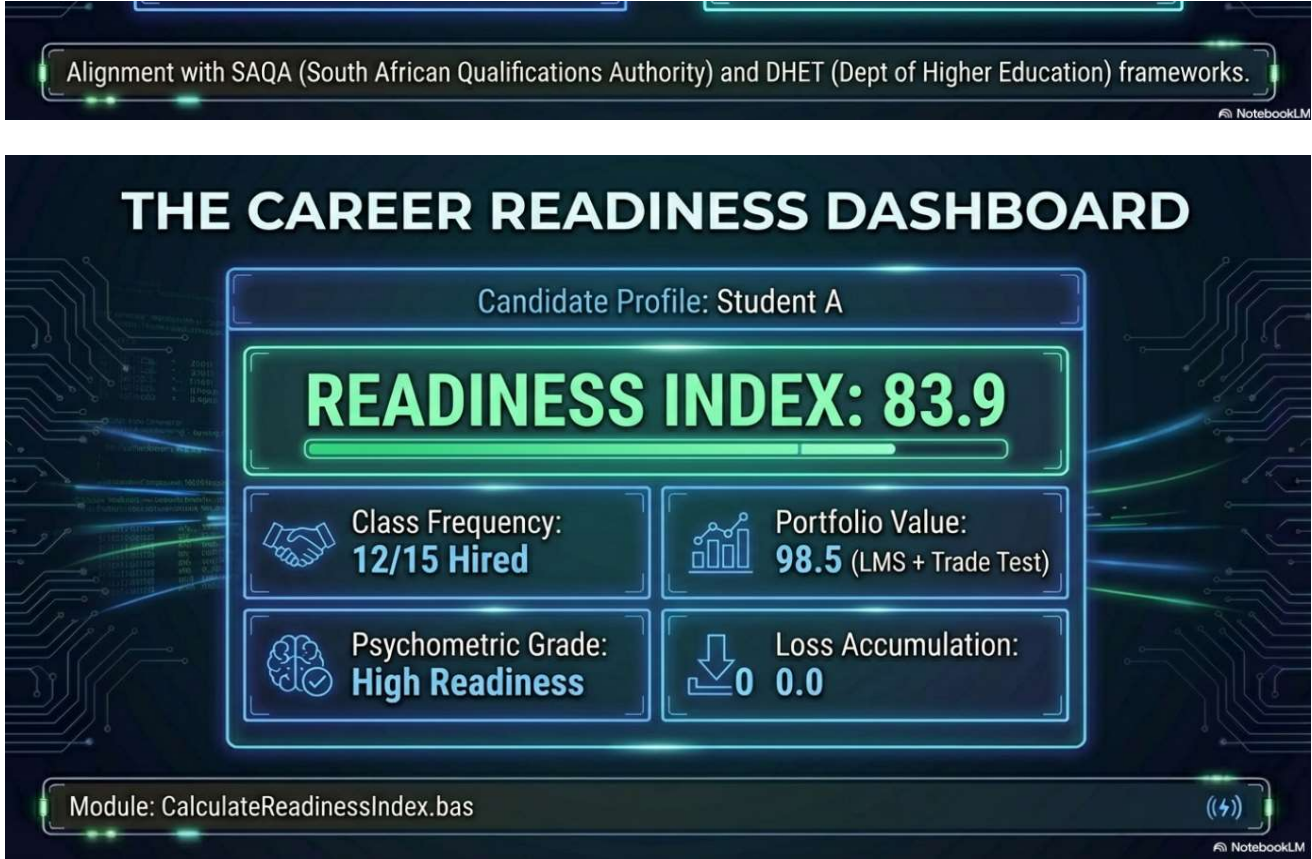
PRACTICAL
Wiring and Instrument Control

THEORY
Bridging N-Diploma theory with workshop practice

Key Metric: Panel Instrument Control scores correlated with Didactic Class Frequency.

CREDENTIALING & INSTITUTIONAL ALIGNMENT

Learner Outcomes	Institutional Roles
SAQA ID 72052 (Electrical Engineering FET)	Technician / Panel Facilitator
SAQA ID 90674 (National N-Diploma)	Lecturer / Researcher
Psychometric High Rank	Career Analyst / Strategist
Public Service Ready	Administrator / Compliance Officer



Administrative Automation: Student Registration System

Front End User Interface

Student Name

Father Name

Date of Birth

Gender ☐ Male ☐ Female

Course Applied

Mobile Number

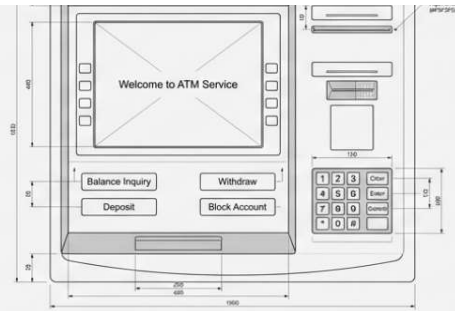
Email Address

Backend Logic

```
VALIDATION & CONTROL:
- Validation: Email Regex patterns & Mandatory field checks
- Image Handling: GetImagePath function
- Database Integration: Excel/VBA dynamic range assignment
- Control: Submit / Reset / Update functionality
```

System Context: Excel VBA Macro & Form Integration (Data Management & Workflow Automation)





```
AUTHENTICATION & LOGIC:  
Const pin = 9343  
Dim balance as decimal = 150  
Const ServiceCharge = 6.5  
  
Function Deposit(ByRef amount as decimal)  
    Balance = amount  
    Return balance  
End Function
```

Education: Diploma in Engineering (Alison) | St Peace College (Electrical Certificate) | SAQA Accredited Qualifications

NotepadLM

